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NOTE to the Reader

- (1) This is the first of two articles published in the "Autumn 2018" issue of the Journal (released in February 2019). Due to the material involved, the proposed set of four articles were subsequently expanded to six, and the remaining four articles were published in the "Spring 2018" issue of the Journal (released in December 2019).
- (2) The original paper's content remains unchanged; and, for the reader's convenience, the original paper's pagination is indicated as **1**, etc.

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James Braid (I): Natural Philosopher, Structured Thinker, Gentleman Scientist, and Innovative Surgeon

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Abstract

James Braid (1795-1860), the natural philosopher, gentleman scientist, the inquisitive and sagacious, structured thinker, the safe, innovative, and efficacious surgeon – renowned for his personal character, range of surgical skills, and overall clinical excellence (especially in the treatment of dangerous and difficult forms of disease, and the correction of deformities such as club-foot, spinal curvature, knock knees, bandy legs, squint, etc.) – the early adopter (and advocate) of ether anaesthesia and, significantly, the originator of scientific hypnotism and the intentional use of structured suggestion has, to a large extent, been written out of history. This article examines Braid's schooling, his apprenticeship as both surgeon and apothecary, his university training, and his interactions with colleagues; and how these, combined with his scientific and intellectual interests, and his professional challenges, came together in Mr. James Braid, surgeon (aged 46) – the 'right man' at the 'right time' – who encountered Charles Lafontaine, in Manchester, in November 1841.

KEY WORDS: James Braid (1795-1860); William Maxwell (1760-1834); Thomas Brown (1778-1820); hypnotism, history of; Royal College of Surgeons, Edinburgh; spinal curvature, treatment, history of; stammering, treatment, history of; strabismus, treatment, history of; surgeon-apothecary, training of; talipes, treatment, history of.

1. Overview

I keep six honest serving-men
(They taught me all I knew);
Their names are What and Why and When
And How and Where and Who.

(Rudyard Kipling, 1920, p.83.)

[4]

Having been actively involved with hypnotism for more than 60 years, and intensively involved with hypnotherapy as a practitioner, teacher, and scholar for more than 45 years, I am deeply concerned with the degree to which so many of the contemporary versions of 'hypnotherapy' seem to reflect a lamentable ignorance of:

- (a) the extent to which hypnotism provides a means through which biochemical, biophysiological, and psychophysiological arrangements can be aroused, directed, and otherwise manipulated; and
- (b) the extent to which sequences of incremental suggestions – of an appropriate nature, form, and content – delivered to a hypnotized subject, can generate specific ideodynamic responses.

As a scholar, I am fully aware of my obligation to engage in the (inward-directed) activities of knowledge creation, and the distillation and refinement of the knowledge so created; and I'm also aware of an even greater obligation to engage in the (outward-directed) activities of diffusing and disseminating that knowledge.

Consequently, and consistent with my previous publications on efficacious vs. non-efficacious suggestion (Yeates, 2002), Coué's *conscious autosuggestion* theories, and practices (Yeates, 2016a, 2016b, 2016c), and Hartland's *ego-strengthening* theories, and practices (Yeates, 2014a, 2014b), this four-article collection extends my own PhD studies (Yeates, 2013) and concentrates on the life, work, theories, and practices of Scottish surgeon James Braid (1795-1860). In the process of exhuming Braid's valuable insights, significant researches, and long-lost enterprises – and restoring his important works to disciplinary consciousness – a number of answers are offered to Kipling's six questions in relation to his crucial, watershed role in the discovery, development, defence, and dissemination of an extremely wide range of clinical applications of hypnotism and suggestion.

It is significant that Braid – a well-trained, well-qualified, and highly experienced surgeon and apothecary – was very well aware of:

- (a) the shortcomings of the pre-scientific-medicine of his day: *Guérir quelquefois, soulager souvent, consoler toujours* ('Cure occasionally, relieve often, console always': see Payne 1967);
- (b) the extent to which efficacy of the inadequate therapies of his day were boosted by the practitioner's manner and the patient's *response expectancy*: "he cures most in whom most are confident" (Burton, 1621/1896, p.21);
- (c) the demonstrated objective efficacy of inert substances administered with appropriate administration rituals in the guise of active ingredients – first identified as *placeboic remedies* by Flint in 1863 (Flint, 1863, p.21) – that seem to be "an archetypal feature of human experience" (Kradin, 2004, p.630); and
- (d) the temporary efficacy of certain therapeutic approaches or supposed remedies that disappear once public faith in them has been transferred to the next craze in line.

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Yet despite this, and fully aware that certain medications did, indeed, effect substantial cures, Braid was strongly convinced that, when applied appropriately, hypnotism – as an entirely new therapeutic agent, in an entirely new therapeutic domain, offering an entirely new range of clinical applications – was not only exceptionally efficacious, but also owed its well-demonstrated efficacy

to the arousal and motivation of a patient's own biochemical, biophysiological, and psychophysiological resources; and, for instance, in 1852, when describing the (positive and negative) therapeutic significance of (hypnotic and extra-hypnotic) suggestion, Braid attributed the observed "*alterative*" effects to the "character and persistency of the predominant idea[s]" upon which his patients' minds had been "involuntarily fixed":

[W]hilst I most readily admit that the efficacy of medical treatment may be greatly aided by the peculiar manners, looks, and language of the person who prescribes the medicines, and the confidence engendered by these means in favour of his prescriptions, still, I feel assured that there is *a positive and obvious effect to be expected from some medicines, altogether irrespective of the physical or mental qualities and manners of the individual who prescribes them.*

Were I not thoroughly convinced of this, as a matter of course, I should consider it quite unnecessary for me to prescribe active medicines in *any* case; since it is alleged by the mesmerists themselves that, by nature, I possess an unusually powerful *magnetic temperament*, and that it is through the influence of this *peculiar temperament* that I have been so successful in producing the hypnotic or mesmeric state with my patients. According to this theory (to which, however, I by no means subscribe) ... the whole efficacy of the means used is attributable to the *magnetic temperament* and the *energetic Will and good intentions of the mesmeriser or medical prescriber.*

...according to these theories of the mesmerists, all [I need to] do in any given case, in order to insure the recovery of my patient, would be merely to approach him and exercise my *will and good intentions in his behalf.*

This assuredly would be making short work of it, and would save me a vast deal of mental labour, as well as pecuniary outlay, in devising, as well as procuring, the requisite medicines for my patients.

It is well known, however, that I use *hypnotism ALONE in a certain class of cases ONLY*, to which I consider it adapted; and that, in some other cases, I use it *in conjunction with medical treatment*; but that, *in the great majority of cases, I do not use hypnotism at all*, but depend entirely upon the efficacy of active medicines, which I prescribe in such doses as are calculated to produce sensible effects.

I can honestly say that, whichever of these modes I am adopting in any given case, it is always done, not merely with the *will*, but also with the *earnest intention and desire*, for the speedy relief or recovery of my patient; still, notwithstanding all this, I am bound to admit that, with *neither* method, nor even with *all* these means combined, can I always succeed in curing some of my patients. ...

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Nevertheless, I feel convinced that with implicit faith, hope, and confidence on the part of the patient, many disorders may be recovered from, even whilst the patients are merely taking a drop of plain water occasionally, or a particle of bread, or *any other harmless substances*, which shall suffice, as visible and tangible agents, to keep their minds involuntarily fixed on the idea that the innocent ingredients used, are agents fraught with great virtues for effecting certain purposes.

The stronger the [patient's] intellect, the more certain are the results to be realised, provided the imagination is sufficiently brilliant, and the faith proportionately fervent, to fix the mind steadily on the confident and pleasing contemplation of the certainty of the cure.

Every strong mental impression produces a concussion on the centres of the nervous and circulating systems, and by thus changing physical action, in many instances, acts

as an alterative; but, whether for good or for evil to the individual, depends *very much* upon the character and persistency of the predominant idea.

I believe that this is the real philosophical explanation of the temporary success of certain medicines and fanciful modes of treating some disorders, — they rapidly rise in the estimation of a certain class of society, whilst novelty and ardent faith inspire their votaries; but, at length, having attained to the culminating point of their fame and favour, as they have no root in them, they speedily wane, to give place to some fresh novelty or nostrum.

(Braid, 1852, p.36-39, emphasis in original)

2. Introduction

Modern Hypnotism owes its name and its appearance in the realm of science to the investigations made by Braid.

He is its true creator; he made it what it is; and above all, he gave emphasis to the experimental truth by means of which he proved that, when hypnotic phenomena are called into play, they are wholly independent of any supposed influence of the hypnotist upon the hypnotized, and that the hypnotized person simply reacts upon himself by reason of latent capacities in him which are artificially developed.

Braid demonstrated that, in this series of remarkable phenomena, hypnotism, acting upon a human subject as upon a fallow field, merely set in motion a string of silent faculties which only needed its assistance to reach their development.

(Jules Bernard Luys, MD, 1890, p.145)

This is the first of four articles that (collectively) examine the hypnotherapeutic legacy of James Braid (1795-1860) and conclude that, without Braid, the modern discipline of *hypnotism/hypnotherapeutics*, considered as a complex aggregate of incremental strategic interventions, may never have come into being at all.

The articles are based on a detailed examination of Braid's own works, and an extended chain of primary and secondary sources (the majority of which were [7])



Fig.1. James Braid: Lithograph, drawn directly onto the stone (from life) by Edwin Cocking (1854)
[Wikimedia Commons: <https://tinyurl.com/yat5hk8e>]

previously unidentified and unexamined): which (severally and collectively) clearly reveal the painstaking fashion in which Braid developed his theories, responded to his critics, and learned from his own observations and clinical experience. The sources include (i) stenographic transcriptions of public lectures, (ii) eyewitness reports of demonstrations and experiments, (iii) letters to newspaper and journal editors, (iv) press releases, (v) paid public notices, (vi) paid advertisements (lodged to ensure the immediate publication of material in newspapers of limited size), (vii) articles in peer-reviewed journals (by sympathizers, by critics, and by Braid himself), (viii) self-published pamphlets (essentially accumulations of already published papers), (ix) 'original' self-published pamphlets (many extremely rare), (x) some (otherwise forever lost) English manuscripts written by Braid (now only available in German translations), and, finally, (xi) books specifically written by Braid to defend his views/practices. [See Yeates (2013, pp.479-544) for a complete [8] list, cross-referenced against the (incomplete) lists provided by Waite (1899, pp.364-375), Bramwell (1913, pp.460-463), Wink (1969, pp.i-v), Kravis (1988, pp.1204-6), and Crabtree (1988, passim).]

Braid's development of hypnotism was extraordinary. It's very wrong to suggest, as many do, that whatever Braid did was inevitably predetermined by a long sequence of *prior unravelments*. Not only is this view wrong, but it also makes Braid's legitimate claims for priority appear unfounded, arrogant, and nonsensical – and, given that “the concern with scientific priority [is] a ‘normal’ response”, this activity clearly denies Braid the “recognition and esteem” that Merton (1942, p.121) identified as “the sole property right of the scientist in his discoveries”.

Braid's native abilities, sagacity, capacity for structured thought, his surgical apprenticeship and university training – combined with his scientific, intellectual, and professional interests – paved the way for a career as an innovative and efficacious surgeon, gentleman scientist, natural historian, defender of hypnotism, and pioneer of the intentional use of structured ‘suggestion’.

Braid's theories and practices developed step-by-step through in-the-field observations, intellectual speculations, experimental investigations, theoretical amendments, and further practical observations; and, by the time of his death, he had accumulated 18 years of direct clinical experience. Braid's importance in the theoretical, philosophical, technical, and clinical evolution of hypnotism is, at least, equal to the significance of his *boundary-work* in creating, promoting, and defending this entirely new field of philosophical, psychological, and medical endeavour, and firmly establishing the domain of *hypnotism* as a rational medico-scientific pursuit.

Whilst his significance as an innovator in relation to hypnotism is obvious to ‘those in the know’, a wider (modern) recognition of Braid as a *watershed* has been obscured by the extent to which Braid's work has been trivialized, distorted, and (otherwise) seriously misrepresented (see, for instance, Erickson, et al., 1961, p.6.) – or, not infrequently, completely hidden from view.

Rather than Braid's work being a rudimentary form of modern hypnotherapeutic practices, quite the reverse obtains; and, in fact, many of the modern practices that claim to exercise Braid's legacy are so ‘hybridized’, ‘degenerate’, and ‘marginalized’ that a comprehensive exhumation of both Braid's *intellectual technology* and his *physical technology* must take place, as a matter of urgency, before the vital, irreplaceable resource of ‘original gene pool’ contained within Braid's work has been irreparably lost to the entire discipline.

Few modern hypnotherapists are aware that Braid persistently promoted and defended his work through a wide range of media. Contemporaneous sources reveal just how innovative he was; and provide a strong contrast between those [9] things of Braid that have been transmitted to us, and the other ‘concealed’ things that my research has exhumed (see Yeates, 2013, *passim*). The four articles situate Braid's professional life, surgical innovations, scientific discoveries, and

hypnotherapeutic practices within the context of the society, religious beliefs, and scientific, medico-surgical, and pharmaceutical knowledge of his day.

3. Preliminary Remarks

Despite the fact that hypnotic practices are still to be satisfactorily explained (or theoretically justified) today, they are not considered to be ultimately *inexplicable* (see Shermer, 2011); and, currently, it is accepted as a 'given' that:

- (a) individuals who decide to present for hypnotic intervention;
- (b) those who decide to apply hypnotic induction processes to such individuals; and
- (c) those who decide to deliver sequences of structured suggestions to such hypnotized individuals;

are all completely rational; however, efforts to support claims that these decisions are rational have been significantly complicated by the enterprises:

- (a) (in the 1920s) to *scientize* what is clearly an art;
- (b) (in the 1950s) to *medicalize* a practice that is far more than one of 'disease eradication';
- (c) (in the late 1970s) to *psychologize* an interaction that is clearly not 'deviant thought correction'; and, even further,
- (d) by the misleading and inaccurate 'creation myths' and 'founders' legends' continuously offered up in support of attempts to restrict hypnotism to a particular occupational group.

3.1 Prochronism

Any attempt to exhume the 'authentic' Braid's is seriously hampered by the extent to which an entirely fanciful past is consistently and *prochronistically* imposed upon Braid and his work.

Prochronism, 'before its time' (a sub-set of *anachronism* 'wrong time') is where an entity (a concept, expression, perspective, philosophy, technology, understanding, etc.) appears *in a temporal context in which it could not yet be present* — e.g., in Shakespeare's *Julius Caesar* (Act II, Scene I) Cassius speaks of a clock striking (more than a thousand years before the mechanical clock had been invented).

3.2 Historical Significance

Noting that significant problems arose when trained historians (inexperienced in a discipline's practices) or those experienced in a discipline's practices (but untrained in historiography) wrote disciplinary histories, Stocking (1965) stressed that disciplinary historians must be experts in both enterprises and, in particular, should not study the past solely in order to make that past related to

one's activities in the present (p.213) – as do '*practitioners*' – or attempt to understand the past just for the sake of that past alone (p.215) – as do '*historians*' (also, see Butterfield, 1936).

[10]

Stocking (p.217) emphasized the difference between:

- (a) something in the past that *was* significant: thus, something '*historically significant*' – e.g., Braid's brief dalliance with phreno-mesmerism, and
- (b) something *from* the past that *is* significant: thus, something '*historically significant*' – e.g., Braid's view that the hypnotist-subject interaction was a subject-internal activity.

For instance, Braid's view, that the hypnotic state was "[a] condition of the brain and the nervous system generally" (*Neurypnology*, 1843, p.31) – rather than one of the mind alone – is supported by the extensive meta-analysis of Del Casale, et al., who reported that "[modern] functional neuroimaging studies not only confirm Braid's (1843) first central hypothesis of hypnosis as a process of enhancing or depressing neural activity but also give objective evidence that the hypnotic phenomena occur also through changes in functional connectivity between brain areas" (2012, p.310).

3.3 "Creation Myths" and "Founders' Legends"

Bascom (1954, 1965) distinguished between '*myths*' (which account for the origin of things in the distant past), and '*legends*' (which describe the deeds of 'heroes' in the less remote past). Samelson noted (2000, p.500) that the *objective veracity* of these myth/legends was entirely irrelevant – provided, that is, that the myth/legends "spell out the proper message": namely, that "progress" has been "remarkable". However, false 'origin myths' and misleading 'founders' legends' are (unfortunately) accepted as true and actively promoted as fact; and, from this, become the 'givens' from which naïve, trusting beginners commence their study. This is not a recent problem:

The precipitancy of writers to oblige the public with anecdotes of celebrated personages, generally gives rise to so many [errors] and mistakes, that it becomes the work of ages to detect them, and to separate from real history that tissue of fables, with which it is interwoven. ...

It is true that such a [task] becomes the more difficult; as successive writers continue to adopt the [errors] of their predecessors; or to foist in unauthenticated particulars of their own.

Add to this, that tales often told acquire a degree of credulity, of which it is not easy to divest them.

But, if the greatest caution be necessary not to admit the false and improbable in biographical memoirs, there is no less judgment requisite to distinguish between what ought, or ought not, to be rejected among those anecdotes which have received the sanction of being frequently transcribed.

(Anon, 1765, p.536, emphasis added).

Given the plethora of bogus claims within the purpose-built, historically untrue ‘creation myths’ and ‘founders’ legends’ offered in support of retrospective appeals to the ‘legitimacy’ of specific modern practices, it is important to identify **[11]** the ‘true pathway’ from which those making such claims have intentionally deviated – for their own fell purpose – and, by presenting the ‘true facts’ of the matter, demonstrating that these false accounts are not only untrue, but are quite intentionally (rather than mistakenly) misleading.

3.4 The ‘Little Known’ Braid

As the nineteenth century drew to a close, there was a vast difference between the minority who were familiar with Braid’s work, and the majority who were not. Well-informed experts, such as Preyer (at Tuke, 1880) and Luys (1890), identified Braid as the originator of scientific hypnotism.

In 1896, Bramwell, reviewed Dessoir’s (1888) collection of “800 works by nearly 500 authors”, finding that (i) “little of value has been discovered [by any of them] which can justly be considered as supplementary to Braid’s later work”, and, further, (ii) “much has been lost through [their] ignorance of [Braid’s] researches”. Moreover, as Bramwell observed (1896b, p.459), “the Nancy theories ... [of] Bernheim and his colleagues ... are [themselves nothing] but an imperfect reproduction of Braid’s later ones”. [Bramwell (1913, pp.274-275) expressed the same opinion of Dessoir’s second (1890) collection of “1182 works by 774 authors”.]

By the early 1890s, Braid was being written out of the history of hypnotism by self-appointed disciplinary gatekeepers (predominantly clinicians). Driven by commercial considerations and professional jealousy, they misrepresented Braid’s lineage, professional standing, discoveries and, in the process of promoting their own enterprises, have quarantined his significant works. As Braid, himself, had once observed:

I may be consoled, perhaps, by reflecting on the following shrewd remark: –
 “In the progress of improvements, it is always a good sign of their appreciation when attempts are made to rob the authors of the merit due to them.”

(James Braid, 1852, p.21)

3.5 The ‘Misrepresented’ Braid

As Willis and Wynne (2006, p.207) observe, the widely-held misconception that all Braid did was to *re-badge* ‘mesmerism’ as ‘hypnotism’, and *nothing more* (asserted by, for instance, Boring, 1927, pp.83-86; and 1950, pp.124-128), is complete nonsense; and the oft-expressed view that Braid’s heritage lies with mesmerism and animal magnetism and, consequently, with:

- (a) *clerics*, such as (exorcist) Maximillian Hell, (magnetist) Johann Joseph Gassner, and (mystic) José Custódio de Faria;

- (b) *mesmerists*, such as Marquis de Puységur, Richard Chenevix, and Jules Denis Dupotet de Sennevoy;
- (c) *medicos*, such as Anton Mesmer, Charles d'Eslon, and Scottish surgeon, James Esdaile, MD; or

[12]

- (d) *mesmerists and phrenologists*, such as *The Zoist's* editors John Elliotson, MD and William Collins Engledue, MD, and the *phreno-magnetist*, Robert Hanham Collyer, MD;

is entirely without foundation.

Bramwell (1896a, p.129) noted that, although “[Braid’s name] is familiar to all students of hypnotism”, “[it’s] rarely mentioned by them” – and, if so, it’s uttered “*without due credit being given to the important part he played in rescuing that science from ignorance and superstition*” (emphasis added) – with almost all (mistakenly) believing that Braid “held many erroneous views” and (mistakenly) that “the researches of more recent investigators [had] disproved [Braid’s ‘erroneous’ views]”. Moreover, few knew of “any of [Braid’s] works except *Neurypnology*”, or “that [*Neurypnology*] was only one of a long series [of publications] on the subject of hypnotism”, or “that in the later ones his views [on hypnotism had] completely changed”. Bramwell also observed that this widespread ignorance of Braid – which he attributed to “imperfect knowledge of his writings” – was further compounded by at least three “universally adopted [and mistaken] opinions”; namely, that:

- (a) Braid was English,
- (b) Braid “believed in phrenology”, and
- (c) Braid “knew nothing of suggestion” – Bramwell noted that “[Braid] not only employed suggestion as intelligently as the members of [Liébeault and Bernheim’s] Nancy school now do, but also that his conception of its nature was clearer than theirs” (1913, p.28; see also Bramwell, 1897a, 1897b; Bernheim, 1897; and Bramwell 1898).

3.6 Hypnotism vs. “Hypnosis”

Despite the constant and widespread assertions to the contrary, Braid never used the term “*hypnosis*”, except to refer to natural sleep, even on a single occasion. (The non-Braidian concept of “*hypnosis*” emerged from the entirely different, ‘*dormez, dormez, dormez*’, sleep-centred work of the Nancy School in the 1890s.)

In 1841 Braid discovered that the phenomena he observed in Lafontaine’s magnetic demonstrations (‘*somnolence*’, ‘*cataplexy*’, etc.) were not caused by magnetic agency, *but by the activation of a physiological mechanism centred on the brain and the nervous system*. He developed his

‘upwards and inwards squint *plus* mental concentration’ technique (N.B. not just ‘*upwards and inwards squint*’) for inducing the particular mental *arrangement* (or ‘*state*’) which he denoted *hypnotism* (originally “*neuro-hypnotism*”).

Because the closest *analogue* to this *hypnotic state* was ‘natural sleep’ (i.e., *hypnosis*), Braid used the term *neuro-hypnotism*, ‘nervous sleep’ (i.e. ‘sleep of the nerves’) – to distinguish it from both ‘mesmeric sleep’ (à la Lafontaine) and ‘natural sleep’ – however, notwithstanding that, Braid’s condition of ‘neuro-hypnotism’ was *as far removed from that of common sleep as it was removed from the normal waking condition* (a view later supported by eminent figures such as John Milne Bramwell and Clark Hull):

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[I have demonstrated that] the effect of a continued fixation of the mental and visual eye in the manner, and with the concomitant circumstances pointed out, is to throw the nervous system into a new condition, accompanied with a state of somnolence, and a tendency, according to the mode of management, of exciting a variety of phenomena, *very different from those we obtain either in ordinary sleep, or during the waking condition.*

(Braid, *Neurypnology*, p.150, emphasis added)

[Our experiments show that] the hypnotised subject, no matter in what stage, should be regarded not only as *awake*, but also as possibly possessing *increased* activity of the special senses...

(Bramwell 1913, p.149, emphasis in original)

[Our experiments show] that hypnosis is not sleep, that it has no special relationship to sleep, and the whole concept of sleep when applied to hypnosis obscures rather than clarifies the situation.

(Hull, 1933, p.221)

3.7 Braid and the Medical Profession

Braid was a Member of both the *Royal College of Surgeons of Edinburgh* and the *Provincial Medical and Surgical Association* (which, later, became the *British Medical Association*); a Corresponding Member of the *Wernerian Natural History Society of Edinburgh* and the *Royal Medical Society of Edinburgh*; a Member of the *Manchester Athenæum for the Advancement and Diffusion of Knowledge*; and Honorary Curator of the museum of the *Manchester Natural History Society*. Despite having trained in Scotland as an apprentice, *sans* MD, he was considered to be a valuable member of his profession, and was registered, right from the outset, as an approved Medical Practitioner under the *UK Medical Act 1858*. Moreover, Braid was very different from his rivals:

- (a) Unlike Gassner, Puységur, Hell, and Faria, he was part of the conventional medical profession;
- (b) Unlike Elliotson (expelled from the University College Hospital in 1838) and Engledue (ostracized for his dedication to mesmerism and phrenology) he remained within the mainstream medical system all his life;

- (c) He was an ‘early adopter’: long after he had invented hypnotism (in 1841), and long after he had first used hypnotism to perform painless surgery (in 1842), he was one of the first in the UK to use inhalation ether for anaesthesia (on 9 February 1847);
- (d) He was a ‘tinkerer’ and prolific inventor, not only inventing hypnotism, but also inventing a technique for the surgical correction of club-foot, a cheap stabilizing apparatus to hasten the rehabilitation of his club-foot patients, an efficacious method for reducing the impact of tsetse flies on cattle in Africa (Braid, 1858a, 1858b; Livingston, 1858), etc., etc.;
- (e) He was amongst the first to provide surgical intervention for stammering, and squint: although surgical intervention is very rarely used today to [14] address either condition, it was in great public demand at the time – indicating that he was, so to speak, at the *leading* (rather than *following*) *edge* of his profession;
- (f) He displayed an exceptional capacity to think by analogy, extending his successful correction of club-foot into the treatment of stammering, squint, lateral spinal curvature, “knock-knees” and “bandy legs” – all of which embodied the same principles as his treatment of club-foot (see Braid, 1841c) – and, as well, into his later application of the same strategies to the treatment of spinal curvature by hypnotism alone (see Braid, 1843, pp.246-248);
- (g) Despite his interest in hypnotism, he continued to publish papers on conventional scientific and medical matters;
- (h) The medical profession never ‘broke’ with Braid, and Braid never ‘broke’ with the medical profession; and,
- (i) Regardless of whatever views they had of his ‘hypnotism’, Braid was continuously regarded with respect and deference by his professional colleagues, and by his profession in general.

3.8 Braid’s Innovations

Quite apart from his substantial discoveries in relation to hypnotic induction, Braid was the clearly the first to:

- (a) experiment with the systematic induction of a wide range of ‘hypnotic phenomena’;
- (b) establish the systematic regularities between the antecedent ‘suggestive’ activities of an operator and the consequent ‘hypnotic’ (and ‘post-hypnotic’) effects manifested by a hypnotized subject;
- (c) harness these systematic regularities in a rational and structured way; and

- (d) use the influence of specific “dominant ideas” to produce significant changes to biology and physiology (for modern applications of the principle, see Barber, 1984).

When Braid’s work is examined from a modern perspective, it is transparently clear that:

- (a) Braid invented the simple and highly efficacious ‘double inwards and upwards squint *plus* mental concentration’ induction technique (Sarbin and Andersen, 1967, p.321);
 - (b) “in an exemplary application of the scientific method ... [Braid proved that the production of the hypnotic state] did not depend upon the existence of any animal magnetism” (Weitzenhoffer, 2000, p.31);
 - (c) Braid actively applied the theoretical “dominant idea” principles of his teacher Thomas Brown, MD (1778-1829) to his practice of hypnotism (see Yeates, 2016b, pp.31-33; Brown, 1851, *passim*);
 - (d) Braid introduced the technical term “suggestion”, which he had adopted from Thomas Brown, MD (Janet, 1884, p.103; 1925, p.156); and
- [15]**
- (e) Braid was responsible for “making the first real attempt to scientifically investigate [hypnotism] and giving scientific hypnotism its start” (Weitzenhoffer, 2000, p.31).

4. Theoretical Considerations

4.1 Serendipity and Sagacity

History tells us that ‘new truths’ are intuited, from time to time, by extraordinary individuals before they have acquired the evidence for it (for instance, Socrates’ “*inner ‘daemon’*”; Diderot’s “*esprit de divination*”, etc.). As Pasteur once remarked, “in the realm of observation, chance only favours the prepared mind” (*‘dans les champs de l’observation le hasard ne favorise que les esprits prepares’*: Pasteur, 1854, p.131) – or, in Henry’s version, “seeds of great discoveries are constantly floating around us, but they only take root and germinate in minds well prepared to receive them” (Henry, 1880, p.163).

Many of Braid’s discoveries were due to his astonishingly simple (non-*complex*) frame of mind; others were due to his *sagacious* nature. Walpole spoke of the three characteristics of *serendipitous discoveries*: those that had been made “by accident and sagacity” (1840/1906, pp.365-366):

- (a) they were *accidental*: in that the discoverer was “not in quest of” the thing discovered.
- (b) they were made by one who was *sufficiently sagacious* to apprehend the connection between items that, to others, were completely random.

- (c) they were *not hidden*: they were clearly visible to the sufficiently sagacious – i.e., ‘hidden in plain sight’ – and, once their location was indicated, could be seen by all.

4.2 “Central Route Processing” and “Need for Cognition”

Cognitive psychologists who studied how ‘*persuasion*’ changes beliefs (i.e., implicit, *non-negotiable values*), attitudes (i.e., explicit, labile, *negotiable values*), and behaviour, identified two factors:

- (a) the *quality* of the *argument* – thus, the importance of making one’s message more intellectually convincing, and
- (b) the *receptivity* of the *individual* – thus, the importance of reducing a recipient’s resistance to one’s message.

Social psychologists developed cognition-oriented *process models* “to describe and explain [the] cognitive mechanisms for attitude and belief change [and the acceptance of] new information” (Dole & Sinatra, 1998, p.115). Significant for their concentration on *listener responses*, rather than *message content*, their models – the *Elaboration Likelihood Model (ELM)* of Petty & Cacioppo, and the *Heuristic-Systematic Model (HSM)* of Chaiken – identified two pathways to attitude change.

[16]

The first – *Central Route Processing* (Petty & Cacioppo, 1981); *Systematic Processing* (Chaiken, 1980) – demanded considerable cognitive effort from the recipient, and involved thoughtful consideration of issue-relevant information, “[requiring] attention, understanding, integration of new information with pre-existing knowledge, and evaluation of ideas” (Mason, 2001, p.717), with the level of the ‘persuasion’ depending upon the *quality* of the argument (see Benoit & Smythe, 2003, pp.103-104).

The second – *Peripheral Route Processing* (Petty & Cacioppo, 1981); *Heuristic Processing* (Chaiken, 1980) – demanded minimal cognitive effort from the recipient, and involved a quick, cursory judgment based on variables *peripheral to message content* “such as the length and comprehensibility of the message or the pleasantness of the context in which it is produced, [and] the attractiveness and credibility of the source” (Mason, p.717).

Cacioppo & Petty identified a significant propensity, which they denoted *need for cognition*, generated by “stable [but not invariant] individual differences in people's tendency to engage in and enjoy effortful cognitive activity” (Cacioppo, et al. 1996, p.247), which sat on a continuum ranging from those individuals “low in need for cognition” (with “low intrinsic motivation to engage in effortful cognitive endeavors”) at one end to those “high in need for cognition” (with “high intrinsic motivation to exercise their mental faculties”) at the other. A need for cognition was a drive independent of “cognitive ability”.

Cacioppo & Petty (1982, pp.119, 129) found that those who “engage in and enjoy thinking for a living” (e.g., law, liberal arts, and education) were a “high-need-for-cognition-group”; whilst those performing “repetitive, monotonous tasks for a living” (such as “assembly line workers”, those “employed in heavy equipment and automotive parts industries”, etc.), were a “low-need-for-cognition-group”. The contrast, by analogy, is precisely that between the meaningful, active learning of an *education system*, in which students are taught to analyse, question, conceptualize, and problem-solve, and the receptive, parrot-fashion, rote learning of a *schooling system* in which students are simply taught ‘the answer’.

Braid’s natural propensity for central route processing, his high-need-for-cognition, his capacity for structured thinking, his scepticism, his talent for mental imagery, and his proficiency for hypothetical thought, became more apparent as his ‘natural’ attributes were aroused, motivated, and further developed by the events of his personal, intellectual, and vocational history.

The remainder of this article provides a brief, selective account of the development of the man who encountered Lafontaine, in Manchester, on Saturday 13 November 1841 (for a more extended account see Yeates, 2013, pp.27-101).

[17]

5. James Braid

5.1 Family

James Braid, the seventh and youngest child of James Braid and Anne Suttie of Ryelaw House, Kinross-Shire, Scotland, was born in on 19 June 1795. He was married at 18, and had two children: a son, and a daughter. Both his son, James Braid (1822-1882), and his grandson, Charles Braid (1850-1897) graduated from the University of Edinburgh’s School of Medicine (Charles was in the same student cohort as John Milne Bramwell), and both became general practitioners. By 1828, Braid had moved his surgical practice to Manchester (Pigot, 1828), where he continued to practice as a surgeon until his death on 25 March 1860.

5.2 Character

Of average height, Braid spoke calmly, with a well-modulated, deep voice. He used the King’s English clearly, without any significant Scottish burr. He was an excellent public speaker; and could project his voice well. He was a competent pianist, and a fine singer with a strong bass voice – singing with and playing piano for the “Swedish Nightingale”, Jenny Lind, when she

visited his home in 1847. He consistently displayed the courage and clear-minded assurance that develops in those surrounded (as children) by large animals, such as Shire horses.

The manner in which his deeply religious family engaged with society at large was reflected in the way he dealt with the infirm, deprived, disadvantaged, and indigent. His obituaries noted that he treated many without charge, often refusing fees even when offered. It may well be that his specializations in the correction of squint, club-foot, stammer, spinal curvature, etc. (conditions that represent far greater handicaps for the less-well-off) were also driven by such gentle motives. He was renowned for his kindness, sympathy, and concern for his patients, and his interest in the wider Manchester community's health and welfare (e.g., in 1833, he was active in support of the move to restrict the working hours of young people, he was a regular 'visitor' to various Manchester schools, he regularly donated books to the Manchester Free Library, and "took an active interest in sanitary matters" [see Fletcher, 1929, p.777]), etc.

Braid, who was highly regarded as a safe, efficacious, and innovative professional surgeon, continued practising as a surgeon until his death. His obituary in the *Manchester Guardian* on 26 March 1860 spoke of a *widespread* (rather than just 'local') reputation – which, the *Guardian* stressed, was "very greatly [due] to his special skill in dealing with some dangerous and difficult forms of disease". The eminence of the referees he supplied in support of his 1843 application for the post of surgeon at the Manchester Royal Infirmary (see Yeates, 2013, pp.335-337) attest to his professional reputation, personal character, range of surgical skills, and overall level of clinical excellence.

According to eminent pharmacist, Robert Mumbray (1895), Braid had the sort of "massive imperturbable features" that "remind[ed] one of a colossal Egyptian [18] head", with "a full, penetrating eye" that was "brilliantly dark". Mumbray recalled conversations with Braid on hypnotism, and described a classic example of Braid's strategy of "induc[ing] a dominant idea in the patient's mind, directed to the seat of the complaint, with the confident expectation of a cure". On one occasion, Braid told Mumbray, "In this particular case, the young lady is of a highly susceptible temperament; you know what remedies she has been taking, and I have seen the prescriptions, but the treatment is really worse than the complaint. Now if you will prepare some pills of bread, to be taken as directed, she is to expect certain results, which will follow." Mumbray noted: "and so it proved; for after taking a few boxes of these potent pills, the patient was restored to health".

Given Braid's "imperturbable" manner, clear, strong, well-modulated voice, and powerful physical strength (he was able to keep his very frightened horse on the pathway during a fierce

electric storm (see Braid, 1817b)), some attributed his hypnotic success to ‘charisma’, or, even, a supposed “magnetic temperament” – as did Elliotson at his only meeting with Braid (Braid, 1852, p.37) – rather than to his surgical training, powers of observation, command of technical skills, and structured thinking in relation to their application. As an example of “*rationalization in defence of paranormal belief*”, Elliotson’s attribution matches Sir Arthur Conan Doyle’s (1927a, 1927b) claim that the successes of ‘spiritualist debunker’ Harry Houdini were due to his actual possession of (undeclared) *supernatural powers*, and the 1976 claim, made by a devotee of spoon-bender Uri Geller – during a display in which professional conjurer and active ‘debunker’, James Randi, duplicated Geller’s phenomena – that Randi was “a fraud”; and that, rather than using sleight-of-hand, Randi was *secretly a psychic*, and was “actually using psychic powers and misleading [the audience] by not admitting it” (Alcock, 2001, p.53):

[Elliotson] told me he had read accounts of my doings and [my] remarkable success in hypnotizing patients.

He then added, moreover, that, on reading the results of my experiments, he had attributed my success to the possession by me of an unusually powerful magnetic temperament; and that he had expressed himself sure that I had a large brain, a large, capacious chest, and great mental energy, *i.e.* that I possessed a determined *will*.

He [Elliotson] farther added, as a proof of his sagacity – “And now that I see you, you are just the person I supposed, for you have them all.”

I [Braid] attributed my success, however, to a very different, and less mystical or special cause.

(Braid, 1852, p.37)

6. Education

As a Scot, and a Presbyterian, Braid was expressly excluded from Oxford and Cambridge – because, at that time, only those who (i) swore allegiance to the Crown and (ii) subscribed to the *Thirty-Nine Articles of the Anglican Church* could enter Oxford or Cambridge – and the Napoleonic Wars meant that any study on the continent was impossible.

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6.1 Schooling

Braid grew up on a prosperous working farm, surrounded by large animals, skilled craftsmen, and intricate machinery. He was nurtured by his sisters, and had his strength, courage, mechanical aptitude, and inventiveness constantly tested by his brothers. According to Wink (1969, p.16), Braid attended the local school, where his teacher, Daniel Ireland, taught him the classics and encouraged him to pursue the wide range of intellectual interests he later displayed. Although an excellent teacher, Ireland suffered intermittent bouts of heavy drinking (during which he beat his students freely), and Wink believes Braid’s direct experience of Ireland’s drunken violence made him abhor “immoderation” or “brutality”, and fostered the “rectitude and

insistence on the truth” that Braid later displayed in relation to any misrepresentation of his stated position—“Though he never repaid spite with spite, he was quick to reply to critics, firm in asserting his priority, [and] sometimes incensed by the injustice of attackers...” (Gauld, 1992, p.281)—and also explained his capacity to fearlessly speak his own mind (even if his views were unpopular), his refusal to be intimidated by powerful, well-connected opponents, his fearless confrontation of physically menacing individuals, and his strong intolerance of injustice.

6.2 Medical Education

Given his decision to become a surgeon, we must recognize that before parliament established a rudimentary set of standards for the UK in 1858 there were many ways a medical qualification could be gained (Rivlin, 1997). Some of these ‘qualifications’ were worth little more than the weight of the paper of their testamur. For instance, the 1804 report of the Committee of the Medical Faculty of Glasgow University stated that medical degrees were awarded without any examination at both St Andrews and Aberdeen Universities, and without “any personal knowledge of the candidates”; which, the report noted, was “a flagrant, disgraceful, and hurtful abuse” (Dow & Moss, 1988, p.238).

In 1845, the *Edinburgh Review* (Anon, 1845) noted that “medical professionals” had a wide range of formal and informal qualifications—full University degrees, extensive University attendance without graduation, extensive apprenticeships, etc.—and were engaged in many different practices: including *physicians* (who gave advice, prescribed their own remedies, but did not dispense them), *surgeons* (in many cases, *surgeon-apothecaries*), *general practitioners*, *apothecaries* (who gave free advice, dispensed their own medicines, and charged for their medicines), *chemists* (preservers of *materia medica* and compounders of medicines), and *pharmacopolists*, or *druggists* (sellers of prepared medicines). By 1845, within the U.K., there were:

no fewer than nineteen distinct sources of medical honours and privileges, nineteen different modes of education for attaining them, and fourteen varieties of professional rights and immunities attached to them; and... the training required for those who aim at the highest of all medical titles, [MD], varies at different institutions, from little else than access to the [20] Archbishop of Canterbury’s favour, up to a course of ten years’ laborious cultivation of classical literature, philosophy, and medical science.

(Anon, 1845, p.237)

In Braid’s day, Edinburgh was the pre-eminent medical faculty in the English-speaking world. Unlike Europe, where surgeons were “[expressly] excluded from the universities” (Rosner, 1991, p.87), student surgeons at Edinburgh had unlimited access to all university lectures (including those within the medical faculty), meaning that “[one could] study medicine and receive a university education at the same time” (Smith, 1883, p.124).

By 1806, the Edinburgh Royal College of Surgeons had a well-structured syllabus (see Inglis, 1809), centred upon a strictly controlled apprenticeship, involving four parties: the apprentice, his master(s), his parents, and the College (with each party having specific rights, obligations and expectations). Only College-approved surgeons, who were also Fellows, *and had been trained as apprentices themselves*, could be a 'master'. The training was reinforced by university lectures, extra-mural classes taught by College-approved experts, or the specific in-house training that masters gave their apprentices. Edinburgh had no chair of surgery, separate from anatomy, until 1831 (Morrell, 1971, p.166); therefore, as a consequence, whatever (inadequate) surgical training MD students received came within their anatomy and physiology lectures – via (perhaps, three *per annum*) demonstrations on corpses of recently executed criminals, in a crowded lecture hall, among 300+ other students, and viewed at a distance of 30 metres; and, moreover, whatever extra-curricular clinical training they gained through the Royal Edinburgh Infirmary was very limited (1,000 students; 250 beds). Thus, the lot of an apprentice – who was a regular, direct, participant in a wide range of surgical interventions – was significantly better.

An Edinburgh apprentice lived with his master during his indenture, influencing his evolving professional character in a very positive way: he could discuss his academic studies with those with greater knowledge and experience, and his progress was constantly assessed, and his understanding was continuously questioned, accurately appraised, and expertly developed. He acquired an extensive practical knowledge of surgery from direct observation. He gained on-the-job experience in the conduct of a surgical practice – along with the confidence, theoretical understanding, medical knowledge, and physical skills necessary for subsequent success as both surgeon and apothecary (Edinburgh trained surgeons kept a well-stocked laboratory and dispensed their own drugs).

Before the appearance of devices like the stethoscope, clinical thermometer, sphygmomanometer, etc. (all of which require passive, silent patients), there was little difference between doctor and patient (Jewson, 1974, 1976; and Tsouyopoulos, 1988). Medical practice was a joint interaction between doctor and patient *as equals*, with each noticing more or less the same things, the only difference being that [21] “the physicians knew what the findings meant, and the layman did not” (King, 1982, p.82).

As an apprentice, Braid's first contact with patients took place long before he had any medical knowledge. This developed a strong set of inter-personal skills; and, unlike book-oriented scholars – to whom patients were little more than vehicles that brought 'the disease' to them – Braid never forgot that the individual that 'had' the disease was, generally, far more important in

the overall scheme of things than the disease they 'had'. Finally, he acquired a capacity for continuous, self-directed professional development, as well as the drive to independently pursue the individual mastery of relevant knowledge and skills.

Braid was rather special: of the 52 individuals admitted to the Royal College of Surgeons on 11 November 1815 (see RCSE, 1815), Braid went on to have more than 10 times the publications than all the rest of that entire cohort combined – and, setting aside four who later gained MD, Braid was one of only two recorded as approved medical practitioners in *The UK Medical Register of 1859* (The General Medical Council, 1859). At a time when most apprentices only attended the university for one year to “supplement their training” (Rosner, 1992, p.22), Braid attended for three.

Because “there was no university statute enforcing a set course of study”, in the process of undertaking his medical studies, Braid not only attended the compulsory (anatomy, surgery, and pharmacy) lectures in the medical school from 1812 to 1814 (see U of E, 2017), but also – although only an apprentice – he regularly attended the weekly meetings of the *Royal Medical Society* (established in 1737 by Edinburgh’s medical students to support each other in their studies and professional development). The Society purchased cadavers, established a library, and held regular meetings at which (with ever-increasing involvement as each student progressed through the stages of his theoretical and practical studies) its members would listen to, learn from, and criticize the theoretical and practical expositions of their peers, with the aim of developing a professional outlook, encouraging coherent expression, critical listening, and logical argument; all of which was designed to develop and polish the skills needed to deliver and defend their M.D. dissertation. In 1854, although *sans* MD, Braid was elected a *Corresponding Member* of the Society (Anon, 1854).

6.3 *Thomas Brown, MD*

Braid also attended the moral philosophy lectures of Thomas Brown (1778-1820), MD. Renowned for his structured thinking and prodigious memory, Brown jointly held the Chair of Moral Philosophy at Edinburgh University from 1810 until his death in 1820 (see Welsh, 1825). Brown had commenced the task of writing a textbook for his students’ use; but had only been able to complete one volume before his death (Brown, 1820a). A jumbled version of Brown’s personal lecture notes was (posthumously and precipitately) published, in four volumes, in 1820 (Brown, 1820b); and, although various improved versions were published in the [22] interim, it was not until 1851 that a complete and fully corrected edition of the notes were published (Brown, 1851).

In one form or another, it was the most popular philosophy text in the English-speaking world for almost 50 years.

Rather than pronouncing how he found things to be, Brown taught *how to go about thinking about things*; and, also,

- (a) as an expert physician, interested in *psychosomatic disorders*, such as the “Swiss Disease” denoted *nostalgia* (lit., ‘homesickness’) by Johannes Hofner in 1688 (see Anspach, 1934; Rosen, 1975; Nikelly, 2004; and Sedikides, et al., 2004), and *somato-psychic* influences on the mind: “Certain states of our bodily organs are directly followed by certain states or affections of our mind; certain states or affections of our mind are directly followed by certain states of our bodily organs” (Brown, 1851, §.XVII, p.106); and
- (b) as a published poet, deeply interested in investigating the evocative characteristics of poetic imagery, he investigated the regularities through which ideas presented to the mind (“suggesting ideas”), became *dominant* and, then, via what he termed the “suggesting principle”, how these “dominant ideas” suggested others (“suggested ideas”); and
- (c) as a philosopher interested in “mental physiology” – i.e., “the physiology of the mind, considered as a substance capable of the various modifications, or states, which constitute, as they succeed each other, the phenomena of thought and feeling” (1851, §.II, p.5) – he “analyzed the whole into parts, classified those parts, and described the dynamics of their interaction” (Dixon, 2001, p.299); and, concluding that ‘the mind’ could not exist in more than one arrangement (“*state*”) at any one time,

he extensively examined trains of thought, and the way that later ideas were systematically suggested by earlier “dominant” ideas, and went on to develop what he termed a “*science of mind*”, which was grounded upon the input from:

- (a) *mental chemistry*: the scientific analysis and reduction of the complex mental states into their simpler components – by an “*intellectual analyst*” (§.XI, p.64), thus, “*intellectual chemistry*” (§.XXXII, p.207); and
- (b) *mental physics*: the discovery of regularities and consistencies through which mental states succeeded one another through “the observation and arrangement of the sequences of phenomena, as respectively antecedent and consequent” (§.IX, p.53), thus, “*intellectual physics*” (§.X, p.60).

6.4 Apprenticeship

At 14, Braid was indentured to the surgeons, scholars, and scientists, Thomas Anderson (1743-1813), F.R.C.S.E. — a founding member of the *Royal Society of Edinburgh* (e.g., Anderson, 1790) — and his son Charles Anderson, M.D., F.R.C.S.E. (1772-1855) — a founding member of the *Wernerian Natural History Society of Edinburgh* (translator of Werner (1809), from German, and von Buch (1810), from French) — for five years, rather than the customary four. As an apprentice, he not only worked very long hours, but also paid the Andersons for the privilege of doing so. He was also required to attend lectures at Edinburgh University, which he did, from 1812 to 1814, prior to undertaking his advanced clinical training at the Royal Edinburgh Infirmary.

6.5 Professional Development

From his farm experience, Braid understood the physical and emotional demands of a surgeon's life — using trocar and cannula to relieve bloat, assisting animals with difficult births, castrating cattle, sewing up wounds, splinting broken bones, reducing joint dislocations, etc. — and, so, would have made an easy transition to the confronting practice of surgery. Similarly, from his interaction with animals and crops, and his observations of climate and weather, he had experience in the domain of herbal medicine, as well as a general, overall understanding of health and disease.

In studying anatomy and physiology, he learned mnemonics, and the Greek and Latin roots of technical terms. In responding to the commercial demands of a surgery and dispensary (see, for example, Johnson, 1792, and Lucas, 1800) he gained many useful capacities and learned how to construct, maintain, and repair an extremely wide range of surgical instruments and apparatus — utilizing the valuable 'tinkering' skills he had developed on his family's farm, and would later use to construct an inexpensive leg extension device to support his innovative, ground-breaking treatment of club-foot.

In acquiring his apothecary skills, he would have been immersed in the *Pharmacopœia*: memorizing weights, measures, dosage volumes, scientific and common names for each of the 500+ *materia medica* in his masters' dispensary, as well as the physical locations of each item. *This would have further enhanced his natural capacity to observe accurately, construct representations, and accurately recall visual images.* He would have learned how to identify, prepare, store, maintain, and calibrate the therapeutic strength of a particular *materia medica*; and, in the process, how to regulate, control, and operate a laboratory containing many dangerous chemicals. He learned the functions of each *material medica* as an independent *simple*, as well as its peculiar additive, antagonistic, or synergistic activities as part of a compound; and, in the process, gained an even greater understanding of, and respect for taxonomical representations of knowledge.

He was taught the principles and practice of surgery in a very structured fashion. Constantly exposed to Ernst Mach-type thought experiments (see Mach 1926/1976; Matthews, 1988; and Yeates, 2004), he was questioned on the anatomy and physiology of the part of the body about to be operated upon, asked what sort of incision should be made (and in what direction), what he expected to discover, how what-he-expected-to-discover should be dealt with, what else might be there, and how that ‘something else’ might be dealt with, and how the incision should be closed. He would watch the surgeon at his work; and, once the operation was over, the surgeon would question Braid in relation to what had actually taken place – [24] especially if there were differences between Braid’s pre-operative speculations and the events of real operation.

So, long before he ever performed even the smallest part of the simplest operation, Braid gained invaluable experience in both the pre-operative diagnosis and assessment of cases, and the post-operative care and treatment after particular surgical interventions; something which would have fostered the development of his bedside manner. In a time without anaesthesia, he would have immediately understood the need for forethought, speed, and accuracy. [When eminent surgeon Robert Liston (1794-1847), performed his first operation under ether (in 1846) he amputated an entire leg (mid-thigh) in 28 seconds, including the suturing.] His detailed knowledge of anatomy and physiology, his training in midwifery, and skill as a surgeon, is clearly shown by his performance, on several occasions, of the very dangerous (due to the high mortality rate) and extremely-rare-at-that-time surgical procedure, known as a Cæsarian section – and, in 1851, he noted that, although a *Cæsarian section* was, indeed, a “formidable” and “important” surgical operation, “it involve[d] comparatively little difficulty to those well acquainted with the anatomy of the parts, and are in frequent habit of operating” (Braid, 1851, p.239).

In many senses, surgery has not changed much since Braid’s time. It starts at step one, and continues until step one is completed, before going on to step two (because part of step one is preparing the way for step two). This is how Braid was taught to work, and it’s certain that constantly working in this fashion refined and developed Braid’s natural propensity for structured thinking; and, also, explains his life-long habit of reducing complex things to simple lists.

7. Medical Practitioner

James Braid was admitted to Edinburgh’s Royal College of Surgeons on 11 November 1815 (RCSE, 1815) as a *Licentiate*. This made him a *Member* of the Royal College of Surgeons, Edinburgh (Anon, 1845) with exclusive rights to practice surgery and pharmacy in the counties of Mid Lothian, East

Lothian, West Lothian, Fife, Peebles, Selkirk, Roxburgh, and Berwick (Rosner, 1991, p.87) – the right to practice within Edinburgh City itself was restricted to the College's *Fellows*.

November 1815 was, perhaps, the worst time for a new surgeon to emerge. In January 1815, the Anglo-American War ended; and, in June 1815, the Battle of Waterloo ended the Napoleonic Wars. Given that a large proportion of Edinburgh trained surgeons routinely went straight into the armed forces, this meant that:

- (a) no new military surgeons were being recruited, and
- (b) large numbers of already experienced military surgeons were being discharged, and were looking for work outside the armed forces.

7.1 Leadhills (1816-1825)

In early 1816, recently married, and not yet 21, Braid was appointed surgeon to the remote mining community at Lord Hopetoun's mines, at Leadhills, Lanarkshire [25] (see Yeates, 2013, pp.49-59). Leadhills, the second highest village in Scotland (at 1,460 ft.), with a population of approx. 1,700 – the sole purpose of which was to accommodate miners and their families – was already renowned for its harsh climate (see Anon, 1821), heavy annual rainfall (more than 150 cm), and its deep winter snow. 1816 was exceptionally harsh; and 1816 – the “year without summer”, caused by volcanic dust from the eruptions of Mt. Mayon (1814) and Mt. Tambora (1815) – was exceptionally harsh worldwide. There were massive storms, tempestuous rainfall, huge floods, unseasonable frosts and snow, crop failures, widespread famine and starvation; and there were food riots throughout the British Isles (see Klingaman & Klingaman, 2013).

Before lead mining, the area was known as “God's Treasure House in Scotland”. In three summers (c.1540), more than \$AUS500 million (today's value) in gold was taken from the area (Gillanders, 1981, pp.235-236). In Braid's time, it was producing 18,000 bars of lead (\$AUS14 million, today's value) each year (Chambers & Chambers, 1844). The lead mines closed in the 1930s. Today, the area is famous for its rare mineralogical specimens, some unique to Leadhills (Gillanders, p.236).

In addition to providing treatment for illness (e.g., Braid, 1825a), and micro-surgery for injury (e.g., Braid, 1816), Braid had to deal with the consequences of the harsh climate and industrial accidents (e.g., Braid, 1817a). He was responsible for the detection, surveillance, and prevention of occupational disease, occupational safety, and injury prevention (e.g., Braid, 1823b), as well as dealing with the ever-present threat of lead poisoning in both the human population (*'mill-reek'*: see Risse, 2005) and their animals (*'lead-brash'*: see Peterkin, 1799). Braid would, later, in the 1832 Manchester cholera epidemic, display the same preventive orientation, protesting in relation to the “pestiferous emanations” from the open grids of the sewer system (Braid, 1853) affecting those

living in the underground, dark, unventilated cellars (Engels, 1887, pp.64-67 estimated that 12% of Manchester's c.1842 workers resided in windowless "cellar dwellings"). He also continued to pursue the natural philosophy and scientific interests he had developed in Leith (e.g., Braid, 1817b, 1823a).

7.2 Dumfries (1825-1828)

Braid and his family moved to Dumfries in August 1825, where, as "Surgeon to the Mining Companies at Leadhills ... for the last nine years", he announced his intention to commence a practice "as a General Practitioner and Accoucheur" (Braid, 1825b).

In Dumfries, Braid encountered the exceptional surgeon, William Maxwell, MD (1760-1834). Maxwell had been extremely politically active as a young man (see Yeates, 2013, pp. 59-63, 792-794). In late 1792, representing French revolutionaries, Maxwell ordered 3,000 daggers from a Birmingham manufacturer to be used to execute French aristocrats who had taken refuge in England (Aspinwall, 1978, 1980) – thus, Maxwell was uniquely responsible for Edmund Burke's famous, [26] dramatic "dagger speech" of 28 December 1782 in the House of Commons (at Debrett, 1793, pp.215-224, esp.p.224; see Gillray, 1792). On 21 January 1793, Maxwell was in France, in command of the guard that led Louis XVI to the guillotine – the same French king that had commissioned the 1784 Inquiry into Animal Magnetism (see Franklin, et al., 2002; Bailly, et al., 2002) – and Maxwell was close enough to the scaffold to clearly hear the last words addressed to the king. In the process, he acquired a handkerchief dipped in the King's blood, which he kept on his person for the rest of his life (Findlay, 1898, pp.52-53). He returned to Scotland in early 1793 (France declared war on England on 1 February 1793),

Associating with the principled, like-minded, and independent Maxwell was a turning point for Braid, exposing him to the extensive (military and civilian) clinical experiences and surgical techniques of one of Scotland's most able surgeons, as well as the ongoing '*master class*' such circumstances offered. Maxwell exposed Braid to a wider range of different and far more complex clinical work; and, also, to technical innovations that transformed Braid's professional future, including:

- (a) use of hair (rather than silk or catgut) ligatures, which did not stretch, thus retaining the connective strength of the sutures, as well a significantly improving wound closure, and reducing post-operative infection (see Forbes, 1846);
- (b) post-amputation binding of arteries, rather than cautery, significantly reducing post-operative recovery time;

- (c) (instead of using the conventional knotted ligature) cutting the trailing thread as close as possible to the knot, significantly reducing post-operative irritation, congestion, and infection (see Haire, 1786; Hennen, 1820; Holt, 1864; and Pugh, 1968).

It is also certain that Braid's extended experience of Maxwell, an extremely shy man, greatly handicapped by a speech impediment since childhood (Thornton, 1979), explains Braid's later sympathy for stammerers. It is also significant that the first operation in the British Isles to use inhalation ether as an anaesthetic was conducted at Dumfries and Galloway Royal Infirmary, on 19 December 1846 (see Scott, 1872).

7.3 Manchester

Whilst in Dumfries, Braid treated a Manchester salesman, Alexander Petty, whose ankle was badly injured when his coach overturned. Petty needed treatment, bed rest, and extra attention from Braid before he was fit to return home.

Many modern writers repeat the fantastic account of the *Manchester Weekly Times* obituary (MWT.1) – that was reprinted in the *Medical Times and Gazette* (Anon, 1860) – which (erroneously) claimed that (i) Petty suffered a compound fracture; (ii) two surgeons were consulted before Braid; (iii) both surgeons recommended amputation; (iv) Braid, after examining Petty, declared he could save his life without amputation; and (v) against the surgeons' advice, Petty trusted his case to Braid. A surgical colleague of Braid's, Anthony William Close, F.R.C.S., went directly to Petty [27] upon reading Braid's obituary, heard the true story and rectified the error (Close, 1860). [Possibly, the obituarist had inadvertently conflated the (1820s) case of Petty's ankle with that of the (1847) case of the footling presentation of an exhausted Mrs. Toft – who, along with her unborn child, needlessly died because the two attending surgeons had taken *three and a half days* to call on Braid's expertise (see Braid, 1851).]

Petty invited Braid to Manchester. Given (i) the 1825-1826 London stock market crash's impact on the Scottish economy, (ii) the near collapse of the Bank of England, and (iii) the total failure of a wide range of English and Scottish Banks, the invitation from well-connected Petty to move to an area of commercial growth and comparative prosperity was, no doubt, most welcome.

Yet, in 1826, Manchester was far from the scientific centre and the enlightened, healthy community that it later became. It was only 6 years since the cavalry had charged with sabres drawn into a mass meeting of 80,000 men and women, killing at least 15, and injuring 700 (the *Peterloo Massacre*). It was a city beset with poverty and squalor, continued civil unrest, official suppression, and military outrages. By 1828, James Braid, surgeon, was listed as practicing in Manchester (Pigot, 1828, p.396).

7.4 Medical Practitioner

Once in Manchester, Braid conducted a general practice; and began to specialize in the treatment of difficult and unusual cases. In particular, he specialized in various deformities—e.g., by March 1841, in addition to correcting speech impediments (principally stammering), he had operated on more than 900 cases of club-foot, spinal curvature, and squint.

7.4.1 Club-Foot

Talipes equinovarus, more widely known as club-foot, from its stunted, clumpy appearance, where “the entire foot is inverted, the heel is drawn up, and the forefoot is adducted” (Hatfield, 2007, p.284). It is a birth defect, evenly distributed across the entire population, occurring in approx. one of every 1,000 births (50% one foot; 50% both feet). In Braid’s day, it was classed as a skeletal deformity—thus, inoperable—and its management was left to bone-setters. Today, it is accepted that it’s due to deformed ligaments, muscles, and tendons distorting the alignments of otherwise normal bones.

According to Bauer (1862), the small number of pre-1840 surgical attempts to correct club-foot all involved the division (*tenotomy*) of the Achilles tendon. In February 1831, having seen “the amputation of the leg of a young girl afflicted with club-foot” a year earlier, German surgeon Georg Friedrich Louis Stromeyer, M.D. (1804-1876), rather than amputating, had operated on a young man with club-foot (Brodhurst, 1856, p.20); not only proving club-foot was operable, but also—by operating through a very small incision—demonstrating “that tendons and muscles might be sub-cutaneously divided with impunity” (Bauer, 1862, p.415). Obviously, any technique using a small incision, rather than a large gaping wound, significantly reduced post-operative infection risks.

[28]

In early 1837, English surgeon W.J. Little (1810-1894)—whose own club-foot had been surgically corrected by Stromeyer—began using Stromeyer’s technique in London. Little’s approach was to make a sub-cutaneous division of the Achilles tendon, and work through a small puncture just above the ankle, with post-operative immobilization with splints, and manipulation. He published a comprehensive 276-page treatise in June 1839, which Braid read almost immediately. In November 1840, Braid reported that he had already performed at least 200 operations on club-foot, “embracing every age from fifty-three years to two days old”, and that “I am pretty certain I have had far more experience in the treatment of talipes than any person in the kingdom; the operation [is] almost a daily occurrence with me” (Braid, 1840, p.446).

If we represent the possible range of strategic interventions in the qualitative, binary oppositions of:

- (a) 'tightening the loose' or 'loosening the tight',
- (b) 'shortening the long' or 'lengthening the short',
- (c) 'relaxing the rigid' or 'firming the flaccid',
- (d) 'tranquillizing the excited' or 'activating the listless', and/or
- (e) 'settling the aroused' or 'rousing the dormant',

it's obvious that Stromeyer's (and Little's) method was entirely based upon 'the lengthening of the short'. However, by contrast, Braid's innovation was the tripartite approach of 'tightening the loose' *and* 'shortening the long' *and* 'firming the flaccid' (Braid, 1841b). Not only did Braid, as surgeon, develop an entirely new surgical procedure, but, as 'tinkerer', he constructed a far cheaper post-operative supporting and correcting apparatus, costing just one shilling – Stromeyer's cost £5/10/- (110 shillings) – for each foot (see Braid, 1840, p.446; Anon, 1841).

Stressing that the principles embodied in his approach were not restricted to club-foot, Braid identified three characteristics in the cases he had seen (1841c, p.351):

- (1) "where one class of muscles was in constant rigid contraction";
- (2) "where there was a morbid relaxation of one or more muscles"; or
- (3) "[where] there was a morbid relaxation of the whole member, say a leg or an arm, with wasting of its substance",

From this, we can say that Braid's approach involved a complex of:

- (a) 'loosening the tight' (and 'lengthening the short') in the case of (1);
- (b) 'tightening the loose' (and 'shortening the long') in the case of (2);
- (c) 'firming the flaccid' (and 'activating the listless' or 'rousing the dormant') in the case of (3).

Fourteen years later, Braid presented a long paper on the treatment of paralysis (Braid, 1855) – which included five illustrative cases (pp.851-855) *using hypnotism as the sole curative agent* – to the annual meeting of the *Provincial Medical and Surgical Association*.

[29]

By 16 July 1841, Braid had operated on 262 cases of club-foot (1841c, p.354); and, because "[he had] had as many as seven new cases to operate on in one day", he had been able to apply the entire range of possible interventions: viz., "from the division of a single tendon to that of the whole class of tendons of muscles which could bear upon malposition" (p.341). Braid's experience was not 'skewed' in any way: "I have not picked my cases, but [I have] operated on the very worst which presented themselves, even in advanced life, [and, therefore,] I am enabled to state this fact

the more confidently, [I have never] met with an incurable case, where the patient had time and patience to go through the necessary treatment" (p.341). Braid became well known for his skill and expertise, and people came from far and wide to consult him; e.g., in September 1848, he was consulted in the case of a child, with a perfect right foot, whose left foot not only had talipes varus, but also had ten toes (see Braid, 1848; and illustration facing p.339).

7.4.2 Rubbing

Braid was particularly proud that his treatment process had succeeded in cases of "morbid relaxation of the whole member... with wasting of its substance" – where every other "approved appliance" suggested by "modern science" ("including electricity and galvanism") had failed (1841c, p.351). An innovation was his use of "friction" (seven cases reported at pp.351-354): an approach entirely consistent with that of an expert traditional Chinese bone-setter, a 跌打師 (*Die-Da Shi*), whose astonishing clinical work I had the pleasure of observing for a whole day in Hong Kong in 1980:

- (a) Braid was concerned with the warmth of the limb (a sign of its 'connectedness');
- (b) he worked from the centre to the periphery (as the Chinese do; whereas, by contrast, Swedish Massage works from the periphery to the centre),
- (c) "friction" – his term – involves a very much deeper sort of interaction than just 'pushing', and
- (d) he used a glass instrument to increase his 'purchase' with the underlying tissues (the Chinese use animal shin bones or porcelain objects).

7.4.3 Strabismus

Strabismus ('squinting'), the condition affecting one or both eyes, where the eyes are not properly aligned with one another, of three types: (i) *convergent*, eye(s) turned inwards towards the nose, (ii) *divergent*, eye(s) are turned outwards away from the nose, and (iii) *vertical*, one eye is turned upwards. In October 1839, Johann Friedrich Dieffenbach performed the first successful tenotomy for strabismus, and in July 1840, in a report of four successful operations, the Belgian 'club-foot expert' Jules Guérin (1801-1886) asserted that strabismus was "*club-foot of the eye*" (Guerin, 1840, p.573; also see Lee, 1841, pp.70-72).

It's not clear when Braid first operated for strabismus. By November 1840, he had operated on more than 450 cases, ranging from 22 months to 63 years (1840, p.446); and, by July 1841 – by which time he was clearly speaking of 'loosening the [30] tight', 'tightening the loose', etc. (1841c, p.354) – nearly 700 cases (p.356), and his "average number of operations for squinting was from ten to eighteen daily" (p.354). Braid was swift, accurate, and efficacious, taking no more than three

minutes a procedure (pp.354-355); and he was certain his swiftness and accuracy decreased post-operative complications to almost zero (1840, p.446; 1841c, p.357).

7.4.4 “Stammering”

Braid performed the first surgical intervention for ‘stammering’ in the world in September 1840 (1841a, 1841c). [Braid uses ‘*stammering*’ in a generic sense – not in the precise, German usage, where *stammer* is the suspended hesitancy of an utterance, and *stutter* the involuntary repetition of sounds – and so one can’t always identify the precise condition Braid treated.]

He only came to consider corrective surgery when patients with “extreme stammering” actively presented themselves to him – *entirely unsolicited by Braid, and entirely of their own accord* – due to his reputation as a safe and efficacious corrector of *talipes* and *strabismus*, demanding that he perform surgical intervention. Yet, given the outstanding success of the surgical correction of *talipes*, it really was plausible that, in the same way that *strabismus* could be thought of as ‘club-foot of the eye’, stammering could be thought of as ‘squinting of the tongue’ (see, also, Lucas, 1841) – and, perhaps, even, Braid was thinking of it as a process of the ‘loosening’ of ‘*tongue-tiedness*’. Braid had previously considered “stammering” to be either “a nervous affection” or an “acquired habit”; and, therefore, not amenable to surgery (1841c, p.31).

Braid always seemed anxious to broadcast the number of times he performed a particular procedure; yet he is uncharacteristically quiet on his operations for “stammering”. Taking Rockey’s speculations (1980, pp.69, 212) as a bench-mark, and given Braid said he saw many more people than could be accounted for as ‘locals’, it is reasonable to say that he might have performed more than 300 ‘minor’ operations, and some 10 ‘major’, radical operations. According to Rockey’s research (p.220) apart from Braid, only six other British surgeons actually performed surgery for stammering. Other than *lingual frenectomy* (a procedure still performed today), the use of surgery to treat stammering soon went out of fashion (see Wyllie, 1891; Burdin, 1940; Stevenson, 1968; Rockey, 1980, pp.192-224). There is no record of Braid performing any such surgery later than July 1841.

7.4.5 Lateral Curvature of the Spine

Thomas Laycock, (1812-1876) performed the first surgical correction of lateral curvature of the spine in the U.K. (he only operated on the condition on one single occasion) in September 1840. On 13 November 1840, performing the second known operation in the U.K., Braid corrected a young boy’s lateral curvature of the spine “by division of the muscles of the back”. He had both a posterior curvature and a severe lateral curvature. He had no power of movement of his legs, which [31] were “cold” and “almost devoid of sensibility” (Braid, 1840, p.445). Braid operated (the

boy being held by his father), using a small, moderately curved, sharp-pointed scalpel, dividing the muscles on the right (concave) side. This was to simultaneously “relieve the tendency to lateral curvature” and to “take off part of the strain from the posterior curvature”. The procedure took less than half a minute, caused little pain, and left a wound smaller than a leech-bite. Its results were so dramatic “that the father instantly exclaimed, ‘Why the back is straight already’; and it was so, as far as the lateral curvature was concerned”. By the time of writing to the *Gazette* (30 November), the lateral curvature had gone, “the posterior curvature [was] much diminished”, and the boy, who, for the last nine months, “was entirely deprived of the use of the lower extremities”, could now walk across the room. Braid also reported operating on three other cases, using the same approach, in the 17 intervening days.

Eighteen months later (March 1842), using precisely the same strategies, he cured a young woman in three treatments, *using hypnotism alone*, whose head had been “rigidly fixed to her left shoulder” for six months, and had resisted the best professional efforts of both the eminent specialist (Sir Benjamin Brodie) and her local physician. A little later (September 1842), he treated lateral curvature of the spine, *with hypnotism alone*, using the same strategies (Braid, *Neurypnology*, pp.246-248).

8. Lafontaine

Although Braid’s paper on club-foot, knock knees, squint, stammering, and spinal curvature (1841c) was not published until 1 October, the final version was completed on 16 July. Only three days later – 19 July 1841 – Charles Lafontaine made his first U.K. public appearance, in London. This lecture was the first of a series of events that would change Braid’s life, and the world, forever.

Yet, as the foregoing strongly suggests, by 1841, Braid had already become a confident, well-established professional surgeon, and a well-respected member of Manchester’s philosophical and scientific society: and, it is certain that, if hypnotism had not unexpectedly come on the scene, Braid was already destined to make his mark on the medical profession.

[Continued in Part II]

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Dr Lindsay B. Yeates, PhD (History & Philosophy of Science), University of New South Wales (UNSW); MA (Cognitive Science), UNSW; Graduate Diploma in Arts By Research (History & Philosophy of Science), UNSW; BA (Asian Studies), Australian National University (ANU); Diploma of Clinical Hypnotherapy; Diploma of Traditional Chinese Medicine; Certificate of Competence as a Therapy Radiographer,

Royal Melbourne Institute of Technology (RMIT). A Fellow and Life Member of the Australian Society of Clinical Hypnotherapy (ASCH), and the Australian Hypnotherapists' Association (AHA), currently Editorial Assistant at the *Australasian Journal of Philosophy*, and an Adjunct Assistant Lecturer in the School of Humanities and Languages at the University of New South Wales, Lindsay has been variously involved with hypnotism, hypnotherapy, and the training of clinical hypnotherapists for more than fifty-five years.

Following the award of MA for his interdisciplinary cognitive science studies in 2002, and a Graduate Diploma in Arts for his research into the mechanism of thought experiments in 2004, Lindsay was awarded a scholarship to undertake extensive post-graduate research into the events surrounding James Braid's discovery of hypnotism in Manchester in 1841. His acclaimed, groundbreaking doctoral dissertation, *James Braid: Surgeon, Gentleman Scientist, and Hypnotist*, was accepted by the examiners without correction. He was awarded a PhD in 2013.

Driven by a life-long interest in scientific hypnotism and suggestion—in particular, the nature, form, and content of efficacious hypnotic suggestion—Lindsay's professional career reflects his view that a major obligation of any scholar is not only to actively engage in the prolonged studies demanded for both knowledge creation, and the distillation and the refinement of the knowledge so created, but also, to diffuse and disseminate that knowledge. Lindsay's on-going studies, the refinement of his personal understandings, and the non-commercial sharing of his research, form a significant part of that long-term endeavour.

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